Mining Fashion Outfit Using Deep Learning

Vedanti Awati
Bhagyashri Gaikwad
Pranali Gunai
Prof.M.k.Kodmelwar
Bhivarabai Sawant College Of Engineering& Research,Pune-411041

Guide:-Prof.M.k.Kodmelwar

Abstract

Fashion industry have evolved in many fields and its growing and making huge market in garment companies and e-commerce entities. The challenging task for IT industry in fashion is to model a predictive system with the domain of data mining. Our project deals with such a system which will result in composing fashion outfits. Meaning, while choosing the cloth this system will recommend the other products (like, bag, footwear, etc.) with it.Our approach is to first implement an end-to-end systemof encoding visual features using a deep convolutional network for complicated visual contents of a fashion image because it is impossible to label oreven list all possible attributes for every clothing image. Secondly, wepropose a multi-modal deep learning framework for rich contexts of fashion outfit. Since, wemust consider not only the pixel information butalso the context information in the fashion outfit.

Keywords: Artificial Neural Network (ANN), CNN,E-commerce,OTP,Deep Learning

Introduction

Fashion domain requires a sound knowledge of the recent trends and ability to expertise in outfit combination. In this project,an “outfit” refers to a set of clothes worn together, typically for certain desired styles. To find a good outfit composition, it is very important to follow the appropriate dressing codes and also be creative in balancing the contrast in colours and styles. For instance, generally people do not pair a fancy dress with acasual backpack, however, once the shoes were in the outfit, it completes the look of a nice and trendy outfit. Many researches have been done on clothes retrieval and recommendation, but none of them considers the problem of fashion outfit composition. This is partially due to the difficulties of modelling outfit composition. On one hand, a fashion concept is often subtle and subjective, and it is nontrivial to get consensus from ordinary labellers if they are not fashion experts. On the other hand, there may be a large number of attributes for describing fashion, for which it is very difficult to obtain exhaustive

labels for training. Thus, most of the existing workisrestricted to the simple scenario of retrieving similar clothes or choosing individual clothes for a given event.

Our project proposes a data-driven approach to train a model that can automatically compose suitable fashion outfit. With the help of internet, it has been facilitated to bring awareness in people about the upcoming trends. Many websites like Polyvore, Pinterest and YouTube have tremendously spread fashion trends and tips by online sharing of data over mobile or various social media sites. Such online communities can be very big. By actively interacting with the websites, the users express their opinions on which fashion outfits are good and which are not so well composed. By aggregating the wisdom of the crowds, we obtain user engagement scores (popularity), for the fashion outfits, which are used to train a classifier to score new fashion outfitcandidates. The full automatic composition system is built upon the scorer by iteratively evaluating all possible outfit candidates.

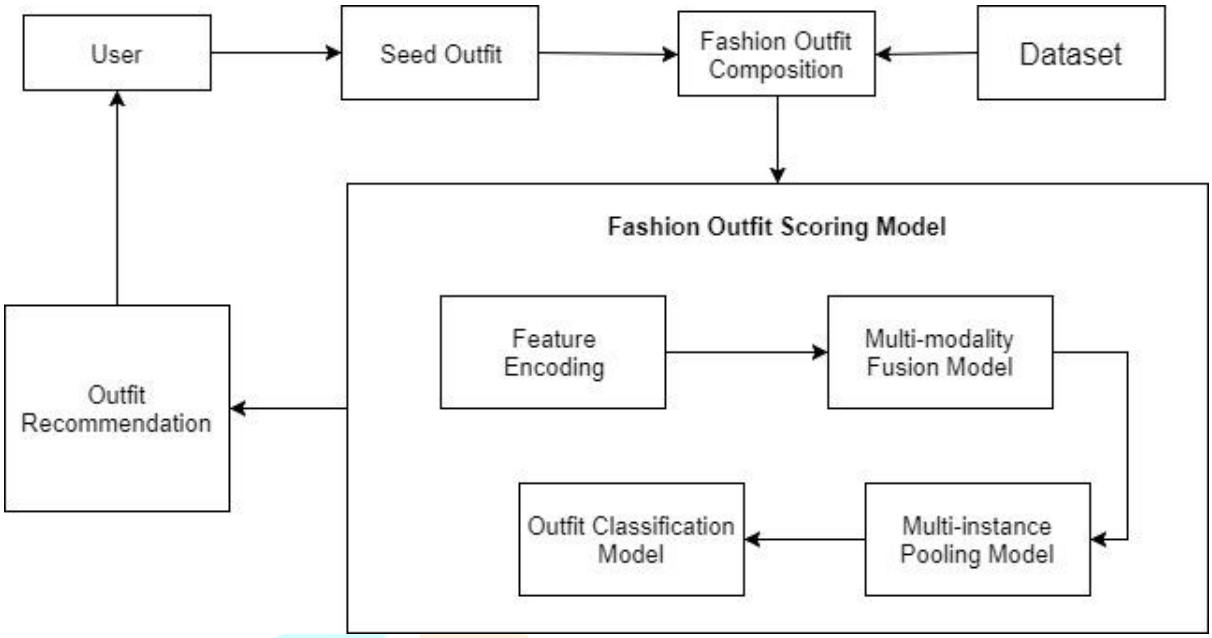
Problem Definition:

As fashion has been evolving day by day, we need to update our style day by day. But due to hectic schedule of people now a day, it is really difficult to cope up with the new style. People tend to face wardrobe malfunction when it comes to styling up with new fashion. Therefore, we need a system which would recommend the styles without wasting any time in checking out the fashion bloggers on internet

Objectives

- To compose complete outfit for user by using deep-learning approach.

SYSTEM ARCHITECTURE



DESIGN OF THE STUDY

Propose Algorithm :-

Step 1: User registration

Step 2: User login

Step 3: Display all available products

Step 4: User selects a particular product out of all the available (e.g.top)

Step 5: CNN algorithm for feature extraction and classification

Step 6: Complete outfit prediction

TOOLS UDED

Software Requirement:

- Operating System : Windows 8 and above..
- Application Server :Tomcat5.0/6.X
- Language :Java
- Front End : JSP,HTML
- Database :MySQL

Hardware Requirement:

- The hardware design of the system includes designing the hardware units and the interface between those units.

- Processor - intel core i3
- RAM - 4 GB (min)

Hard Disk - 40 GB

STATISTICAL TECHNIQUE USED

We have used the deep learning technique to compose the whole outfit for the user. This task is done using various image processing techniques. Initially the user will be provided with all the images of various products belonging to different categories. The Convolutional Neural Network (CNN) algorithm is being used in our project.

ALGORITHM

- CNN means Convolution Neural Network.
- In machine learning, a CNN is a class of deep, feed-forward artificial neural networks that has successfully been applied to analyzing visual imagery.
- CNNs use relatively little pre-processing compared to other image classification algorithms.
- Layers:-
- Convolutional
- Pooling
- Fully Connected

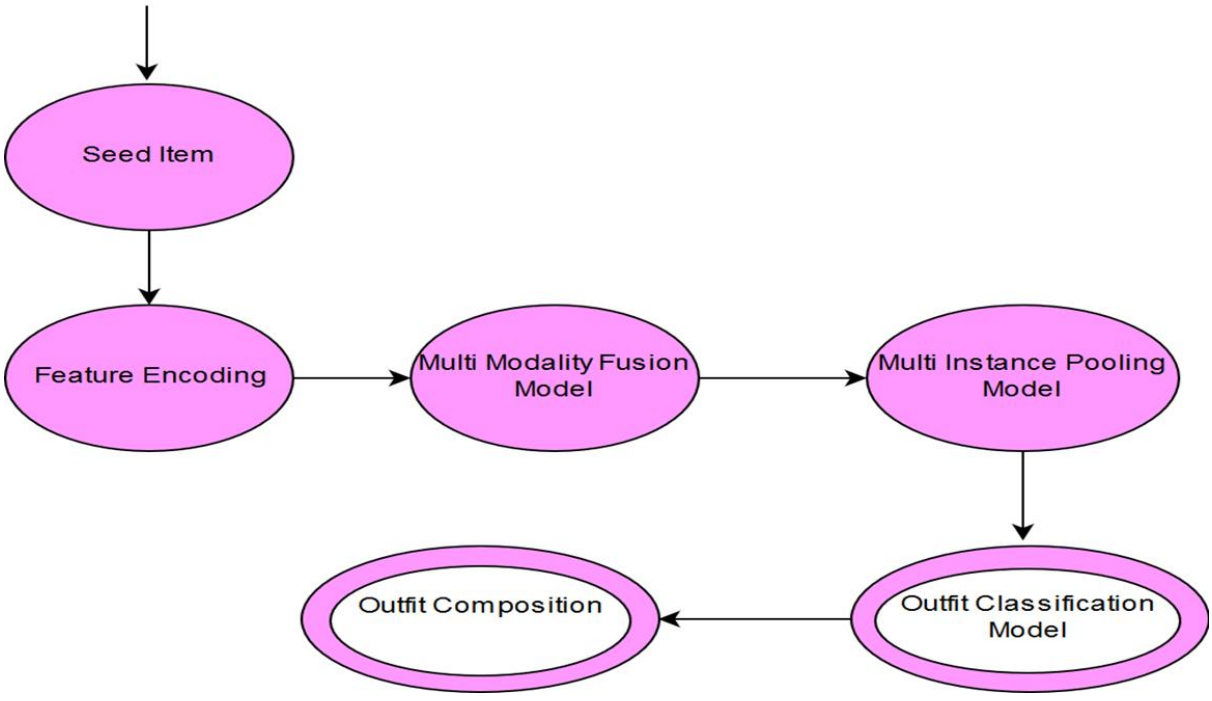
OUR APPROACH

According to this project the mathematical model as follows:

Mathematical model

- **Let S be a set such that**
- **S={s, e, i, o, f , CNN, Success, failure}**
- **s= Seed Item**
- **e= Fashion Outfit Composition**

- **i= User Seeds the Item**
- **o= Composed Faction Outfit**
- **f=functions**
- **CNN= when user click on any product, CNN starts working. It extracts the features from the image. After feature extraction it classifies the image, for that it uses multi-modality fusion model and multi instance pooling model.**
- **Success= System composes the fashion outfit automatically after selecting any product. (Desired outcome generated)**
- **Failure= System is not able to compositions fashion outfit after selecting the product (Desired outcome not generated or forced exit due to system error.)**
- **States: S0,S1,S2,S3,S4,S5**
- **S0: Seed Item**
- **S1: Feature Encoding**
- **S2: Multi-Modality Fusion Model**
- **S3: Multi-Instance Pooling Model**
- **S4:Outfit Classification Model**
- **S5:Outfit Composition**



Experiment Result:

The algorithm implemented in the system shows the following result:

1. The best composition model can simulate the expert results with considerable accuracy, which shows great potential of this work.
2. The system predicts the complete outfit for the user in negligible time.
3. The system saves user's time.

Future scope:

This system will be very beneficial for the fashion industries and for the people who are no way near to fashion. This project helps in automatic selection of combination of outfits when a person chooses single product. This could save a lot of time on searching for a new product to match the current outfit.

Reference:-

[1] J. Huang, R. S. Feris, Q. Chen, and S. Yan, "Cross-domain image retrieval with a dual attribute-aware ranking network," ICCV, 2015.

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[2] Q. Chen, J. Huang, R. S. Feris, L. M. Brown, J. Dong, and S. Yan, "Deep domain adaptation for describing people based on fine-grained clothing attributes," in CVPR, 2015.

[3] H. Chen, A. Gallagher, and B. Girod, "Describing clothing by semantic attributes," in European Conference on Computer Vision. Springer, 2012, pp. 609–623.

[4] T. Iwata, S. Watanabe, and H. Sawada, "Fashion coordinates recommender system using photographs from fashion magazines," in IJCAI, 2011.

[5] A. Krizhevsky, I. Sutskever, and G. Hinton, "Imagenet classification with deep convolutional neural networks," NIPS, 2012.

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Vedanti Awati

Bhagyashri Gaikwad

Pranali Gunai

(B.E. Computer Engineering).

Conclusion:

This System proposes a framework for automatic resuscitation rhythm classification. System uses five algorithm such as Naïve Bayes, KNN, HKNN,CNN and Decision Tree to increase the accuracy in the predication. System is able to predict the five categories these are VF,VT, PGR, PEA,AS etc. The proposed algorithm has an accuracy of 80%.

Reference:

[1] G. D. Perkins et al., "European resuscitation council guidelines for resuscitation 2015: Section 2. adult basic life support and automated external defibrillation," Resuscitation, vol. 95, pp. 81–99, 2015.

[2] J. Soar et al., "European resuscitation council guidelines for resuscitation 2015: Section 3. adult advanced life support," Resuscitation, vol. 95, pp. 100–147, 2015.

[3] T. Nordseth et al., "Clinical state transitions during advanced life support (ALS) in in-hospital cardiac arrest," Resuscitation, vol. 84, no. 9, pp. 1238–1244, 2013.

[4] E. Skogvoll et al., "Dynamics and state transitions during resuscitation in out-of-hospital cardiac arrest," Resuscitation, vol. 78, no. 1, pp. 30– 37, 2008.

[5] T. Eftestøl et al., "Representing resuscitation data-considerations on efficient analysis of quality of cardiopulmonary resuscitation," Resuscitation, vol. 80, no. 3, pp. 311–317, 2009.

[6] U. Ayala et al., "Automatic detection of chest compressions for the assessment of CPR-quality parameters," Resuscitation, vol. 85, no. 7, pp. 957–963, 2014.

[7] E. Alonso et al., "Reliability and accuracy of the thoracic impedance signal for measuring cardiopulmonary resuscitation quality metrics," Resuscitation, vol. 88, pp. 28–34, 2015.

[8] M. Risdal et al., "Impedance-based ventilation detection during cardiopulmonary resuscitation," Biomedical Engineering, IEEE Transactions on, vol. 54, no. 12, pp. 2237–2245, 2007.

[9] E. Aramendi et al., "Feasibility of the capnogram to monitor ventilation rate during cardiopulmonary resuscitation." Resuscitation, vol. 110, pp. 162–168, Jan. 2017.

[10] U. Irusta et al., "A high-temporal resolution algorithm to discriminate shockable from nonshockable rhythms in adults and children," Resuscitation, vol. 83, no. 9, pp. 1090–1097, 2012.